

Pentachlorophenol

CAS No. 87-86-5

General Information

Pentachlorophenol (PCP) is used primarily as a fungicide to preserve wood in the United States. The use of PCP over the years has decreased as a result of regulations by the U.S. EPA issued in 1984. The general population is exposed through food and water sources, which can be contaminated from either PCP releases or waste-site runoffs or from breakdown products of other organochlorinated chemicals (e.g., HCH, HCB). Homes containing PCP-treated wood are another source of exposure. Workers who use PCP may absorb the chemical through

their skin and lungs. Unintentional overdoses of PCP can lead to inhibition of oxidative phosphorylation and clinical hyperthermia. IARC has determined that pentachlorophenol is possibly carcinogenic to humans, and the U.S. EPA has classified pentachlorophenol as a probable human carcinogen.

Interpreting Urine Pentachlorophenol Levels Reported in the Tables

Most of the PCP excreted in human urine is either unchanged PCP or PCP conjugated to glucuronic acid and sulfate. Measurements provided in this *Report* include both free and conjugated forms of PCP. The 95th percentile level in a non-random subsample from

Table 164. Pentachlorophenol

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population aged 6 years and older, National Health and Nutrition Examination Survey, 1999-2000.

	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)						Sample size
		10th	25th	50th	75th	90th	95th	
Total, age 6 and older	*	< LOD	< LOD	< LOD	< LOD	< LOD	1.30 (.660-2.00)	1994
Age group								
6-11 years	*	< LOD	< LOD	< LOD	< LOD	.760 (<LOD-1.60)	1.65 (<LOD-2.30)	482
12-19 years	*	< LOD	< LOD	< LOD	< LOD	.650 (<LOD-1.90)	2.00 (.660-5.40)	681
20 years and older	*	< LOD	< LOD	< LOD	< LOD	< LOD	1.10 (<LOD-1.60)	831
Gender								
Males	*	< LOD	< LOD	< LOD	< LOD	.630 (<LOD-1.20)	1.40 (.660-1.90)	973
Females	*	< LOD	< LOD	< LOD	< LOD	< LOD	.860 (<LOD-2.00)	1021
Race/ethnicity								
Mexican Americans	*	< LOD	< LOD	< LOD	< LOD	< LOD	.650 (<LOD-1.90)	696
Non-Hispanic blacks	*	< LOD	< LOD	< LOD	< LOD	.970 (.500-1.64)	1.64 (1.00-2.70)	521
Non-Hispanic whites	*	< LOD	< LOD	< LOD	< LOD	< LOD	1.30 (.550-2.10)	602

< LOD means less than the limit of detection, which is 0.5 µg/L.

* Not calculated. Proportion of results below limit of detection was too high to provide a valid result.

NHANES III participants (Hill et al., 1995) was about eight times higher than the 95th percentile for adults reported here. In the German Environmental Survey of 1990-1992, urinary PCP levels for adults were 9.4 ug/L and 12.8 ug/L at the 90th and 95th percentiles, respectively. For children aged 6 to 14 years, urinary PCP levels at the 90th and 95th percentiles were 11.7 ug/L and 14.9 ug/L, respectively (Seifert et al., 2000).

1999-2000 subsample. Although in another study, Angerer et al. (1992) reported levels in municipal incineration workers and control subjects that are similar to levels reported here.

The ACGIH lists a BEI for PCP as 2 mg/gram of creatinine (ACGIH, 2000). Concentrations in this NHANES 1999-2000 subsample are well below this level of concern for workers. Workers involved in timber treatment have urinary PCP levels many times higher (Jones et al., 1986) than levels found in the NHANES

Table 165. Pentachlorophenol (creatinine adjusted)

Geometric mean and selected percentiles of urine concentrations (in µg/gram of creatinine) for the U.S. population aged 6 years and older, National Health and Nutrition Examination Survey, 1999-2000.

	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)						Sample size
		10th	25th	50th	75th	90th	95th	
Total, age 6 and older	*	< LOD	< LOD	< LOD	< LOD	< LOD	1.12 (.870-1.29)	1994
Age group								
6-11 years	*	< LOD	< LOD	< LOD	< LOD	.930 (.553-1.14)	1.39 (.949-2.53)	482
12-19 years	*	< LOD	< LOD	< LOD	< LOD	.525 (.323-1.00)	1.26 (.529-2.51)	681
20 years and older	*	< LOD	< LOD	< LOD	< LOD	< LOD	1.06 (.857-1.26)	831
Gender								
Males	*	< LOD	< LOD	< LOD	< LOD	.750 (.462-.947)	1.13 (.874-1.53)	973
Females	*	< LOD	< LOD	< LOD	< LOD	< LOD	1.10 (.818-1.26)	1021
Race/ethnicity								
Mexican Americans	*	< LOD	< LOD	< LOD	< LOD	< LOD	.947 (.692-1.57)	696
Non-Hispanic blacks	*	< LOD	< LOD	< LOD	< LOD	.713 (.391-1.17)	1.34 (.720-1.57)	521
Non-Hispanic whites	*	< LOD	< LOD	< LOD	< LOD	< LOD	1.13 (.845-1.26)	602

< LOD means less than the limit of detection (see previous table).

* Not calculated. Proportion of results below limit of detection was too high to provide a valid result.